Amendments to the Drawings:

The attached replacement sheet of drawings includes changes to Fig. 2 translating the labels from German to English. This replacement sheet, which includes Figs. 1 to 3, replaces the original sheet including Figs. 1 to 3.

Attachment: One Replacement Sheet of Drawings

REMARKS

Claims 30 and 32 were rejected under 35 U.S.C. 112, second paragraph. Claims 19, 22 to 25, 31, 32, 34 and 35 were rejected under 35 U.S.C. 102(b) as being anticipated by Autenrieth et al. (U.S. Publication 2002/0057066). Claims 20, 21 and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Glennon (U.S. Patent 4,532,443). Claims 27, 28 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Ueno et al. (U.S. Publication 2001/0001287). Claims 29 and 30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Nonobe (U.S. Publication 2002/019220).

Claims 19, 24 to 26, 28, 30 and 32 to 35 are amended and new claims 36 to 38 are added to more particularly and distinctly claim the invention. After entry of the amendment, claims 19 to 38 will be pending.

Reconsideration of the application based on the following is respectfully requested.

Rejections under 35 U.S.C. §112, second paragraph

Claims 30 and 32 were rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to provide sufficient antecedent bases. Claims 30 and 32 have been amended to more particularly and distinctly claim the present invention.

Withdrawal of the rejection under 35 U.S.C. 112, second paragraph, of claim 30 and 32 is respectfully requested.

Rejections under 35 U.S.C. §102(b): Autenrieth et al.

Claims 19, 22 to 25, 31, 32, 34 and 35 were rejected under 35 U.S.C. 102(b) as being anticipated by Autenrieth et al. (U.S. Publication 2002/0057066).

Autenrieth et al. discloses a fuel cell system that includes a fuel cell unit 3 having an anode side and a cathode side. An anode-side feeding line 4 is provided for the supply of fuel and a anode-side outflow line 5 is provided for the removal of anode-side exhaust. A cathode-side feeding line 6 is provided for the supply of oxygen and outflow line 7 is provided for the

removal of cathode-side exhaust. The fuel cell system also includes a switch 10 for electrically switching the fuel cell unit on and off depending on the available quantity of fuel. (Abstract; Fig. 2). The Autenrieth et al. system controls the state of switch 10 based on the state of a pressure sensor 14 or alternatively a measuring device 15.

Claim 19 recites "[a] fuel cell system comprising:

a fuel cell;

an intermediate electrical accumulator;

a common supply connector for coupling the fuel cell and intermediate electrical accumulator to an electrical consumer;

a sensor coupled to the fuel cell for sensing an internal operating parameter of the fuel cell;

a switch arranged and configured to be controlled to be in one of an open state and a closed state, the open state electrically isolating the fuel cell from the intermediate electrical accumulator and the common supply connector, and the closed state electrically coupling the fuel cell to the intermediate electrical accumulator and the common supply connector; and

a control circuit for controlling the state of the switch between the open state and the closed state, as a function of the sensed operating parameter."

It is respectfully submitted that Autenrieth et al. does not disclose "a sensor ***coupled*** to the fuel cell for sensing an ***internal*** operating parameter of the fuel cell" as recited in claim 19. As discussed above, the only sensors disclosed in Autenrieth et al. include a pressure sensor 14 or a measuring device 15. (Paragraph [0025]; Fig. 2). Autenrieth et al. does not disclose a sensor which senses "an internal operating parameter of the fuel cell" and thus does not disclose each and every limitation of claim 19. As a result, Autenrieth et al. cannot anticipate claim 19.

Withdrawal of the rejection under 35 U.S.C. 102(b) of claim 19, and claims 22 to 25, 31, 32, 34 and 35 depending therefrom, is respectfully requested.

Rejections under 35 U.S.C. §103(a): Autenrieth et al. in view of Glennon

Claims 20, 21 and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Glennon (U.S. Patent 4,532,443).

Autenrieth et al. is described above.

Glennon discloses a "power switching circuit for controlling the power from a DC supply to a regenerative load. The switching circuit includes a plurality of parallel connected MOSFETs. A first diode is connected in parallel with the MOSFET switches and poled to conduct reverse current from the load. A second diode is connected in series with the MOSFETs to block the flow of reverse current through the MOSFETs." (Abstract).

It is respectfully submitted that Glennon does not cure the deficiency of Autenrieth et al. as discussed above with respect to why the rejection of claim 19, from which claims 20, 21 and 26 depend. Since the combination of Autenrieth et al. and Glennon does not disclose or teach all of the limitations of claims 20, 21 and 26, this combination does not render the claims obvious and the withdrawal of the rejection under 35 U.S.C. 103(a) of claims 20, 21 and 26 is respectfully requested.

Rejections under 35 U.S.C. §103(a): Autenrieth et al. in view of Ueno et al.

Claims 27, 28 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Ueno et al. (U.S. Publication 2001/0001287).

Autenrieth et al. is described above.

Ueno et al. discloses a fuel cell power generating apparatus 1 that includes a fuel cell stack 2, which provides an electrical output to an output system 70 used to drive a motor 77. (Paragraph [0038]). At startup and during normal operation, an output voltage from stack 2 is tested. (Paragraph [0047]). If the output voltage from stack 2 exceeds a first predetermined voltage, a relay 71 is turned on to connect the output voltage from stack 2 to motor 77. (Paragraphs [0048] to [0051]). Otherwise, if the output voltage of the stack 2 is below 35V, relay 71 is either never closed (if the output voltage is below 35V at startup) or is opened (if the output voltage falls below 35 V during normal operation). When this occurs, the entire apparatus 1 is turned off to prevent damage from occurring to the fuel cell stack 2. Thus, the voltage measurement in Ueno et al. is used only to determine whether the fuel stack is openable or not.

Claims 27, 28 and 33 depend from independent claim 19. It is respectfully submitted that it would not have been obvious to one of skill in the art to have modified the system of Autenrieth et al. in view of Ueno et al. to have satisfied the limitations of claim 19 and the Examiner has not articulated any appropriate motivation for one of ordinary skill in the art to have modified Autenrieth et al. to include the voltage sensor device of Ueno et al. Autenrieth et al. specifically discloses sensing hydrogen in the anode-side feeding line 6 or alternatively in outflow line 7 as a way to control the output switch 10. Ueno et al. teaches that the entire system should be turned off if the voltage of the fuel stack drops below a predetermined level. Autenrieth et al. controls the output switch to manage load requirements based on the flow of hydrogen in the fuel cell. One of ordinary skill in the art would not be motivated to substitute the voltage sensor of Ueno et al. for the pressure sensor of Autenrieth et al. because these sensors operate differently and are used for different purposes. Thus, because the limitations of claim 19 are not obvious, claims 27, 28 and 33 are not obvious in view of Autenrieth et al. and Ueno et al.

Withdrawal of the rejection under 35 U.S.C. 103(a) of claims 27, 28 and 33 is respectfully requested.

Claims 27 and 28: Argued Separately

Claim 27 recites "[t]he fuel cell system of claim 19, wherein the sensor comprises a voltage sensor for recording a terminal voltage of the fuel cell."

Claim 28 recites "[t]he fuel cell system of claim 27, wherein the control circuit is arranged and configured to control the state of the switch to be in the closed state when the voltage sensor senses an event of exceeding an upper limit voltage and to control the state of the switch to be in the open state when the voltage sensor senses an event of undershooting a lower limit voltage."

With further respect to claims 27 and 28, it is respectfully submitted that it would not have been obvious to one of skill in the art to have modified Autenrieth et al. in view of Ueno et al. to have met the limitations of claims 27 and 28. The explicit purpose of Autenrieth et al. is to electrically switch a fuel cell unit "off and on depending on the availability of resources." (Paragraph [0005]). Because Autenrieth et al. specifically desires switching the fuel cell unit off and on depending on the availability of resources, it would not have been obvious to switch the

fuel cell unit off and on based on a signal from the voltage sensor 76 of Ueno et al. since, as discussed above, Ueno et al. uses the voltage measurement for a different purpose. Thus, it would not have been obvious to one of skill in the art to have modified the system of Autenrieth et al. in view of the system of Ueno et al. to meet the limitations of claims 27 and 28.

With further respect to claim 28, Autenrieth et al. specifically teaches an electronic switch that is dynamically controlled using a pulse width modulated trigger signal, not an electronic switch that is used to enable or disable the entire system, as in Ueno et al. Ueno et al. in no way teaches or suggests the control circuit of claim 28 which is "arranged and configured to control the state of the switch to be in the closed state when the voltage sensor senses an event of exceeding an upper limit voltage and to control the state of the switch to be in the open state when the voltage sensor senses an event of undershooting a lower limit voltage." Ueno et al. instead discloses a voltage sensor 76 that measures the overall output voltage of fuel cell stack 2 and merely indicates that relay 71 is turned on and off to enable or disable the **entire** apparatus 1. (Paragraphs [0048] to [0054]). Thus, the combination of references does not disclose each of the limitations of claim 28 and thus does not render claim 28 obvious.

For these reasons also, withdrawal of the rejection under 35 U.S.C. 103(a) of claims 27 and 28 is respectfully requested.

Rejections under 35 U.S.C. §103(a): Autenrieth et al. in view of Nonobe

Claims 29 and 30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Autenrieth et al. in view of Nonobe (U.S. Publication 2002/019220).

Autenrieth et al. is described above.

Nonobe discloses "a fuel cell system having a polymer electrolyte type fuel cell formed by stacking unit cells, each of which has an electrolyte membrane sandwiched by two electrodes, the system including a fuel gas supplier that supplies a fuel gas to the fuel cell, a fuel gas humidifier that humidifies the fuel gas, a current detector that detects an electric current outputted from the fuel cell, a resistance detector that detects a resistance of the fuel cell, and a humidification condition determiner that determines a condition of humidification of the

electrolyte membranes based on the current detected by the current detector and the resistance detected by the resistance detector." (Paragraph [0008]).

Claim 29 recites "[t]he fuel cell system of claim 19, wherein the sensor comprises an internal resistance sensor for recording an internal resistance of the fuel cell."

Claim 30 recites "[t]he fuel cell system of claim 29, wherein the control circuit is arranged and configured to control the state of the switch to be in the closed state when the internal resistance sensor senses an event of exceeding an upper limit resistance and to control the state of the switch to be in the open state when the internal resistance sensor senses an event of undershooting a lower limit resistance."

Claims 29 and 30 depend from independent claim 19. It is respectfully submitted that it would not have been obvious to one of skill in the art to have modified the system of Autenrieth et al. in view of Nonobe to have satisfied the limitations of claim 19, because the pressure sensor of Autenrieth et al. is quite different from the resistance sensor of Nonobe. Autenrieth et al. specifically discloses that hydrogen is sensed in the anode-side feeding line 6 or alternatively in outflow line 7 to control the output switch, but does not disclose sensing an ***internal*** operating parameter of the fuel cell with a sensor ***coupled*** to the fuel cell. In Nonobe, resistance detector 48 is used to detect the level of humidity at the electrolyte membrances 32. The resistance measurement, along with a number of other measurements, is used to control the gas supply and humidification levels of that gas, <u>not</u> to manage the load requirements of the fuel cell 44. Thus, there would be no reason for one of ordinary skill in the art to substitute the resistance detector 48 of Nonobe for the pressure sensor of Autenrieth et al. As a result, because Autenrieth et al. is not properly combinable with Nonobe, claims 29 and 30 are not obvious in view of Autenrieth et al. and Nonobe.

With further respect to claim 30, Nonobe in no way teaches or suggests the control circuit of claim 30 which is "arranged and configured to control the state of the switch to be in the closed state when the internal resistance sensor senses an event of exceeding an upper limit resistance and to control the state of the switch to be in the open state when the internal resistance sensor senses an event of undershooting a lower limit resistance." Nonobe merely discloses that "the valve of resistance of the fuel cell 30 reflects the degree of wetness of the

electrolyte membranes 32." Thus, neither reference discloses the limitations of claim 30 and one of skill in the art would not have had any reason to have modified Autenerieth et al. to include resistance detector 48 of Nonobe and caused switch 10 of Autenrieth et al. to open and close based on a parameter measured by resistance detector 48. This is an additional reason why this combination does not render claim 30 obvious.

Withdrawal of the rejection under 35 U.S.C. 103(a) of claims 29 and 30 is respectfully requested.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

Respectfully submitted,
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